

AMENDMENTS TO THE SPECIFICATION

Page 1, paragraph 3, please amend as follows:

The carrier reel used in this method has such a structure as that a flange portion consisting of two surfaces which is are distanced from each other by a tape width and provided in parallel with and opposed to each other is connected to a hub portion provided between the two surfaces.

Page 1, paragraph 3, please amend as follows:

In the carriage method for electronic components adopting such a carriage method, after carriage, an axial rod is inserted into a through hole and or the like provided in the center of a body portion of the reel to mount the carrier reel having the carrier tape wound around the reel on an automatic assembling line, and the individual electronic components are supplied by drawing the carrier tape, thereby performing mounting and assembling of each electronic component.

Page 2, paragraph 2, please amend as follows:

To achieve this aim, the present invention provides a carrier reel comprising: a flange portion having a first surface and a second surface which is opposed to and substantially parallel to the first surface; and a hub portion which is provided between the first surface and the second surface and connected to the flange portion, a carrier tape in which a plurality of electronic components are mounted being wound around the hub portion, accommodation portions accommodated accommodating a drying agent being provided to in the hub portion.

Page 2, paragraph 3, please amend as follows:

In addition, the present invention provides a carriage method using the carrier reel comprising: winding a carrier tape in which a plurality of electronic components are mounted around a hub portion of a carrier reel which comprises a flange portion having a first surface and a second surface which is opposed to and substantially parallel to the first surface and a hub portion which is provided between the first surface and the second surface and is connected to the flange portion, the hub portion having accommodation portions accommodated a drying agent provided thereto; accommodating the drying agent in the accommodation portions; and putting the carrier reel around which the carrier tape is wound into a bag, sealing the bag and performing carriage after accommodating the drying agent in the accommodation portions.

Page 3, paragraph 3, please amend as follows:

BRIEF DESCRIPTION OF THE DRAWINGS

While the specification concludes with claims particularly pointing out and distinctly claiming the subject matter which is regarded as the invention, it is believed that the invention, and the objects, features and advantages thereof will be better understood from the following description taken in connection with the accompanying drawings in which:

Page 3, paragraph 3, please amend as follows:

Fig. 2 is a plane plan view of a carrier reel in the first embodiment according to the present invention;

Page 3, paragraph 4, please amend as follows:

Fig. 3 is a perspective view of the carrier reel in the first embodiment according to the present invention, taken along the line III-III in the plane plan view;

Page 4, paragraph 3, please amend as follows:

Figs. 1 to 3 are views showing a first embodiment according to the present invention. Fig. 1 is a cross-sectional view of a carrier tape wound around a carrier reel of this embodiment; Fig. 2, a plane plan view of the carrier reel; and Fig. 3, a cross-sectional view taken along the III-III line in Fig. 2.

Page 4, paragraph 5, please amend as follows:

As shown in Fig. 1, a carrier tape 1 in which electronic components are accommodated is constituted by a carrier tape main body 1a and a cover tape 1b. Embossed pockets 3 which are concave portions are provided ~~to~~ in the carrier tape main body 1a at predetermined intervals in the lengthwise direction. A chip type electronic component such as a capacitor or an LSI mounted on a printed board is accommodated in each embossed pocket 3. Particularly, in Fig. 1, a resin sealed type semiconductor device 2, which is easily affected by humidity during carriage, e.g., a semiconductor device sealed by epoxy-based mold resin, is accommodated. Further, the cover tape 1b prevents an electronic component accommodated in the embossed pocket 3 from coming off.

Page 5, paragraph 1, please amend as follows:

As shown in Figs. 2 and 3, the carrier reel in this embodiment is constituted by a pair of flat plate portions which is a flange portion 5 having a first surface and a second surface which is opposed to and substantially parallel to the first surface, and a drum portion which is a hub portion 6 to which the flange portion 5 is connected. A bearing portion 7 as a through hole which is supported by an axial rod of the automatic assembling line is formed in the center of the hub portion 6. To the bearing portion 7 is fixed the axial rod of the automatic assembling line provided in a direction vertical to the flange portion 5 consisting of the two surfaces after carriage of the reel. In this manner, the carrier reel of this embodiment is mounted on the automatic assembling line. In addition, drying agent accommodation portions 8 for accommodating the drying agent are provided to in the hub portion 6 except the bearing portion 7. The carrier reel of this embodiment may be constituted by individual parts such as the flange portion or the hub portion, or may be integrally molded.

Paragraph 3, bridging pages 5 and 6, please amend as follows:

Specifically, in this embodiment using the reel 4 having a reel external diameter A of 330 mm and a hub diameter N of 100 mm, the rectangular drying agent accommodation portion 8 having the a cross section of 25 mm x 50 mm is provided.

Page 6, paragraph 1, please amend as follows:

In the present invention, however, the cross section of the drying agent accommodating portion 8 does not need to have a rectangular shape, and it may

have a sector form. Additionally, the present invention is characterized in that a large hollow portion of the hub portion 6 except the bearing portion 7 is utilized to provide the drying agent accommodating portion 8 for accommodating the drying agent. An opening portion is, therefore, provided to in the flange portion and the entire hub portion 6 except the bearing portion 7 may be used as the drying agent accommodating portion.

Page 7, paragraph 1, please amend as follows:

Since the carrier tape 1 accommodating therein a plurality of electronic components is wound in the a later step, the diameter of the hub portion 6 usually takes such a value as that each accommodated electronic component can not cannot be damaged. As a result, the diameter of the hub portion 6 is larger than the diameter of the bearing portion 7 which supports a shaft for packaging each electronic component, and a large hollow portion exists in the area of the hub portion 6 except the bearing portion 7.

Page 7, paragraph 2, please amend as follows:

In this embodiment, the drying agent accommodating portions 8 are provided by utilizing the hollow portion of the hub portion 6. Therefore, assuring only a cubic volume of the carrier reel suffices carriage of each electronic component which requires the drying agent during carriage, and the an excessive volume for putting accommodating the drying agent is not necessary. Consequently, even in carriage of each electronic component which can be easily affected by moisture, an

amount of the entered moisture can be reduced, and the carrier reel which does not have to increase the cubic volume of the entire package can be provided.

Page 8, paragraph 1, please amend as follows:

It is to be noted that the shape of the drying agent accommodating portion 8 corresponds to the through hole in this embodiment but provision of a space in which the drying agent can be accommodated can suffice the present invention, and it does not have to be the through hole. Moreover, in the bearing portion 7, although this embodiment employs the through hole, the through hole does not have to be used. Mounting the reel to the automatic assembling line in the assembling step which is a post-process can suffice for the present invention.

Page 9, paragraph 2, please amend as follows:

In other words, using the carrier reel according to this embodiment requires a not excessive cubic volume of the drying agent. Thus, when carrying each electronic component which can be easily affected by moisture and requires the drying agent, the same number of the electronic components can be carried in a space which is substantially the same as that in the case of carrying electronic components requiring no drying agent. Furthermore, since the volume of the package used for carriage becomes equal irrespective of packaging environment conditions for the electronic component to be carried, the a package having the same size can be used.

Paragraph 3, bridging pages 9 and 10, please amend as follows:

A second embodiment according to the present invention will now be described with reference to the accompanying drawings. Figs. 4(a) and 4(b) are views of illustrating respective steps showing a carriage method using the carrier reel in the second embodiment according to the present invention.

Page 10, paragraph 1, please amend as follows:

A reel 4 having spaces ~~portion~~ for accommodating therein the drying agent such as described in connection with the first embodiment, i.e., drying agent accommodating portions 8, is first prepared. Subsequently, a carrier tape 1 which has been also described in conjunction with the first embodiment and is shown in Fig. 1 is wound around a hub portion 6 of the reel 4, and a plurality of electronic components are accommodated in the reel 4. As shown in Fig. 4(a), a drying agent 9 having a necessary amount is accommodated in each drying agent accommodating portion 8 of the reel 4.

Page 11, paragraph 2, please amend as follows:

After carrying the electronic components in this manner, as shown in Fig. 5, the carrier reel is mounted on the automatic assembling line with the carrier tape being wound around the carrier reel. At this time, the end of the carrier tape 1 is wound around a take-up reel 13. Subsequently, each electronic component accommodated in the carrier tape, for example, a chip type electronic component such as a capacitor or an LSI, is supplied to a printed board 12 and or the like by a tool 11 by which drawing and vacuum absorption of the carrier tape are performed. After supply of each electronic component to the printed board, for example, a solder

reflow process is conducted so that mounting of each electronic component on the printed board and assembling of an electronic product are executed.

Page 12, paragraph 2, please amend as follows:

When the reel in which the drying agent accommodating portions 8 for accommodating therein the drying agent are provided at positions symmetrical to the bearing portion 7 is used, the weight balance relative to the shaft becomes equable in the assembling process for an electronic product using the automatic assembling line, and the post-process can be hence carried out without requiring the process for removing the drying agent. As a result, the electronic component can be assembled with the reduced labor and time.

Page 13, paragraph 2, please amend as follows:

As described above, when the carrier reel according to the present invention is applied, since the accommodating portions for accommodating the drying agent are provided to in the hollow portion of the hub portion, there is no need to provide an excessive space for the drying agent to be included even if electronic components which can be easily affected by moisture are carried. Therefore, the size of this reel can be the same as that of the carrier reel for electronic components which require no drying agent, and packaging materials such as common inner boxes and outer boxes can be utilized.